**PROJECT TITLE:** Engaging private well owners in groundwater protection

**I. PROJECT STATEMENT**

Three-quarters of Minnesotans depend on groundwater for drinking water. Protecting groundwater requires not only science-driven planning at the watershed scale, but also the engagement and action of local community members. Private well owners make up 21% of the state’s population and are key stakeholders in addressing groundwater problems, yet their level of engagement in and their perceptions about groundwater management are not well understood. In particular, we have limited understanding of their beliefs, attitudes, and actions related to groundwater protection, despite their being primary implementers of groundwater initiatives. In statewide studies previously conducted by this study’s PIs, Soil and Water Conservation District (SWCD) and Local Government Unit staff identified community engagement as a critical need in addressing groundwater quality and quantity issues. Further, that work also suggests that lack of meaningful feedback about groundwater protection is a severe constraint to engaging diverse stakeholders in groundwater management. The overall goal of this project is to assess community capacity for groundwater protection. Specific objectives are to:

1) Identify constraints to and opportunities for effective civic engagement in groundwater management

2) Develop and evaluate benchmarking as a tailored feedback tool to engage local communities in groundwater protection

To meet these objectives, we will apply a mixed-methods approach that includes three activities. In activity 1, we will collect quantitative social data using a mail survey of private well owners. In the second activity, we will conduct focus groups with private well owners in various parts of the state. In the third activity, we will develop and evaluate benchmarking as an engagement tool for groundwater management. This project will provide multiple benefits to stakeholders and resource managers throughout Minnesota. This study fills a much needed gap in our understanding of community capacity for groundwater protection. Study findings will provide baseline information to help develop community engagement initiatives that speak to the values, needs, and concerns of local communities. Social data collected from this study can be used to develop community engagement strategies that are tailored to individual communities.

**II. PROJECT ACTIVITIES AND OUTCOMES**

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| **Activity 1 Title: Mail survey of private well owners to identify constraints to and opportunities for their engagement in groundwater management**  **Description:**We will develop and administer a mail survey of 4000 private well owners across Minnesota. The survey will investigate private well owners’ beliefs about groundwater problems and groundwater protection, their willingness to engage in groundwater management, and support for groundwater management strategies. Survey data will be analyzed using descriptive and inferential statistics (e.g., regression) to identify factors that influence private well owners’ engagement in groundwater protection. Findings from this activity will inform participant recruitment in activity 2.  **ENRTF BUDGET: $149,584.00** |

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| **Outcome** | **Completion Date** |
| *1. Develop survey questionnaire* | *December, 2020* |
| *2. Administer survey questionnaire* | *June, 2021* |
| *3. Conduct survey data analysis* | *September, 2021* |

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| **Activity 2 Title: Focus groups with private well owners to assess motivations for and constraints to their engagement in groundwater protection**  **Description:**We recognize that private well owners across the state are a diverse group with varying land uses and groundwater concerns. We will conduct three focus groups with private well owners that represent the diversity of well owners across the state. The focus groups will provide in-depth qualitative data about well owners’ motivations for and constraints to engagement in groundwater protection. Focus group questioning will follow a semi-structured format (Brinkman and Kvale, 2015). Standard qualitative data analysis (e.g., Corbin and Strauss, 2008) will be conducted to identify key capacities and constraints.  **ENRTF BUDGET: $117,208.00** |

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| **Outcome** | **Completion Date** |
| *1. Develop focus group questions and study materials (e.g., agenda, script)* | *September, 2021* |
| *2. Conduct focus groups* | *December, 2021* |
| *3. Conduct qualitative analysis of focus group data* | *April, 2022* |

**Activity 3 Title: Randomized control trials and post-intervention survey to determine effectiveness of intervention strategy**

**Description:**Findings from activities 1 and 2 will be used to develop a benchmarking tool to provide tailored feedback about groundwater issues, and actions private well owners can take to address groundwater issues. A randomized control trial followed by a post-intervention survey will be conducted. Participants will be selected from the pool of survey respondents in activity 1. Participants will be randomly assigned to one of two experimental groups: a treatment group that receives a benchmarking report, and a control group that does not receive the intervention. Six months after the intervention, a post-intervention survey will be administered. The survey will inquire about participants’ beliefs and concerns about groundwater problems, and their conservation and engagement behaviors. Inferential statistics (e.g., repeated measures analysis of variance) will be used to evaluate any changes in beliefs and behaviors before and after intervention.

**ENRTF BUDGET: $114,208.00**

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| **Outcome** | **Completion Date** |
| *1. Develop and distribute benchmarking tool* | *June, 2022* |
| *2. Administer post-intervention survey* | *January, 2023* |
| *3. Conduct pre/post-intervention analysis and prepare final report* | *June, 2023* |

**III. PROJECT PARTNERS AND COLLABORATORS:**

Mae A. Davenport, University of Minnesota (Project Team, Co-PI)

Jeffrey Broberg, Minnesota Well Owners Organization (Collaborator)

Sharon Pfeifer, Minnesota Department of Natural Resources (Collaborator)

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:**

Project findings will have broad relevance for natural resource professionals, policymakers, and planners who work in the area of groundwater management. In particular, it will inform statewide and community-specific community engagement initiatives. Project findings and reports will be made available on an open access platform. Project findings will also be shared with stakeholders through an outreach workshop. We also anticipate producing peer-reviewed publications in high quality journals.